

MATHEMATISCHES FORSCHUNGSINSTITUT OBERWOLFACH

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Set Theory

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ABSTRACT. This stimulating workshop featured a broad selection of some of the most important recent developments in combinatorial set theory, the theory and applications of forcing, large cardinal theory and descriptive set theory.

Mathematics Subject Classification (2010): 03E.

Introduction by the Organisers

This set theory workshop was unusually broad, covering a wide range of topics in the theory of forcing, large cardinals, combinatorial set theory and descriptive set theory. We had ten 50-minute talks and twenty 30-minute talks, making no attempt to organise them into themes, but rather to mix them randomly; this gave us a good opportunity to learn about areas of the field other than our own, providing a good overview of the current state of the subject. The schedule was sufficiently relaxed to allow plenty of time for informal discussions, which are of course essential to the success of an Oberwolfach meeting.

In combinatorial set theory we heard from Todorćević, Dobrinen, Solecki and Rinot on deep new developments in Ramsey theory and the basis problem for generalised gaps. Rinot's results constitute a major advance in partition theory and were the topic of an additional evening session in which he presented more details of his proof. We heard nine talks about forcing; among the highlights were Moore's recent advances on how to iterate without adding reals, Spinas' work on the additivity of the Silver ideal, Fischer-Toernquist's work using template iterations to study maximal cofinitary groups and Brendle-Mejia's study of Rothberger

gaps. Large cardinal theory was also well-represented in talks by Sargsyan on the core model induction, Zeman on self-iterability of core models, Gitik on mixing collapses into short-extender forcings as well as in talks making use of large cardinal forcing by Dzamonja, Sinapova and Cummings. A very strong component of the meeting was represented by the new wave of young descriptive set-theorists, including Tserunyan, Sabok, Lupini (the only student at the meeting), Motto Ros, Melleray, Conley and Toernquist. They presented deep and fascinating talks about automatic continuity, Borel complexity in the context of C^* algebras, Borel and measurable graph colourings, the nonexistence of analytic families which are maximal in various senses as well as an important generalisation of the van der Corput lemma.

The workshop as a whole demonstrated the increasing breadth of the field as well as its steady progress towards resolving problems that have been of constant interest and under investigation for decades.

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